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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,821	09/05/2006	Stuart Sneyd	4791-4018	4458

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MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

EXAMINER

SLIFKA, COLIN W

ART UNIT	PAPER NUMBER
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4162

NOTIFICATION DATE	DELIVERY MODE
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10/01/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOPatentCommunications@Morganfinnegan.com
Shopkins@Morganfinnegan.com
jmedina@Morganfinnegan.com

Office Action Summary	Application No. 10/567,821	Applicant(s) SNEYD ET AL.	
	Examiner COLIN W. SLIFKA	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08 February 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1 and 2 recite that the fine-grained solids are "calcined in a preheating and/or calcining stage" (claims 1 and 2, line 3). This is indefinite because there are two distinct stages claimed, one labeled "preheating" and the other "calcining," however, it is understood that calcination must occur. Therefore, the "calcining stage" is inherent and may not be optional. All dependant claims are also rejected. Appropriate correction is required.

Regarding claim 11, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-9 include the phrase "in particular," followed by further limitations, rendering the claim indefinite. For example, claim 2 reads "...temperatures of 400 to 1250°C, 'in particular' at 540 to 1000°C" (lines 3-4). It

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is not clear which of the two ranges is meant to be claimed. All dependant claims are also rejected. Appropriate correction is required.

Regarding claim 8, due to the phrase "in particular," it is unclear whether the claim is dependent from claim 1. Therefore:

Claim 8 provides for the use of magnesite as flux material, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 8 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 3 recites the limitation "pm" in lines 4 and 5. There is insufficient antecedent basis for this limitation in the claim. "pm" is interpreted as μm , which is consistent with the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirsch et al (US 5,527,379) in view of Xavier Mayer (US 3,393,066) and Kepplinger et al (US 5,534,046). Hirsch teaches heat treatment of fine-grained solids of iron ore. Hirsch teaches that there are 2 preheaters, a first fluidized-bed reactor downstream of the preheaters in which the solids are prereduced, a second fluidized bed reactor further downstream in which the solids are reduced, and a briquetting plant still further downstream in which the reduced material is hot briquetted. However, Hirsch does not teach the addition of magnesite to the solids. Xavier Mayer clearly teaches that the addition of finely ground alkaline earth metal oxides and carbonates (MgO and MgCO_3), or mixtures thereof, can be directly added to iron ore reduction processes to inhibit and in some instances to entirely prevent bogging (col. 2, lines 55-60). Xavier Mayer clearly teaches that, in bogging, the individual iron ore particles cling or weld together to form aggregates or agglomerations, and that the tendency of an ore to bog increases with increasing temperature, especially as the degree of metallization increases (col. 2, lines 4-6 and 15-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the use of magnesite as described by Xavier Mayer in the reduction process as described by Hirsch in order to achieve the desirable results clearly taught by Xavier Mayer. This also meets the limitations of claim 8.

With respect to claim 1 and the limitation of "briquetting at a temperature above 500°C ," Xavier Mayer teaches calcination at temperatures from 1000 - $1,800^\circ\text{C}$ (col. 4,

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lines 41-46) followed by briquetting and Hirsch clearly teaches that the product is preferably briquetted in a hot state (col. 7, lines 15-16). Neither Xavier Mayer nor Hirsch teach briquetting at a specific temperature. Kepplinger teaches a process for producing sponge iron in which the reduced ore reaches a briquetting press at a temperature of at least 750°C (col. 7, lines 37-39). As Kepplinger teaches that briquetting is successfully performed at a temperature of 750°C or greater, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the briquetting step of Hirsch and Xavier Mayer at the temperature taught by Kepplinger with a reasonable expectation of success, as Hirsch also teaches that briquetting is performed in a hot state, and both references teach a similar process of briquetting.

Regarding claim 2, Hirsch teaches preheating the ore at a temperature of 500°C (col. 8, line 33).

Regarding claims 3-5, Xavier Mayer teaches that 0.2 wt-% of MgCO_3 is used (col. 6, 1st table) which is within applicant's claimed range of 0.1-5 wt-%. Xavier Mayer teaches that oxides and carbonates or magnesium should be much finer than 14 mesh and should range from "about 48 mesh (297microns) and finer" (col. 3, lines 22-24 and 58-60). While "about 297 microns" is outside of applicant's claimed range of 300 microns to 3 millimeters, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a range of particle sizes which are suitable for reducing solids, and further, Xavier Mayer teaches other additives having larger particles sizes than 400 mesh (see Table in col. 6). Regarding claim 5, because the combined use of the magnesite as taught by Xavier Mayer in the reduction process as taught by Hirsch is

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commensurate in scope as claims 3 and 4, it is expected that the results will be the same.

Regarding claims 6 and 9, Hirsch teaches fluidized-bed reactors that heat the material up to 550-650°C (col. 3, lines 52-54 and 66-67). These reactors are upstream of the briquetting stage, and the fluidized-bed reactors taught by Hirsch are considered to be together, or separately, "a heating stage." It is further noted that not all fluidized-bed reactors require heat, and while the FBR serves the purpose of reducing the ore, it simultaneously heats the material prior to the briquetting stage.

Regarding claim 7, Hirsch teaches that the temperature in the reactor of the circulating fluidized bed system is adjusted to about 550-650°C (col. 3, lines 52-54). Hirsch also teaches that the product leaving the second fluidized bed reactor has a metallization or 92% (col. 8, line 45).

Regarding claim 10, Hirsch teaches that at least one of the fluidized bed reactors is of the circulating fluidized bed system (col. 7, lines 48-49).

Regarding claim 11, Hirsch teaches, according to the figures in the patent, that the reheated gas leaves the reheater 33 in line 34 and a part of that gas is supplied in lines 35 as a fluidizing gas to a conventional fluidized bed reactor 36 and another part is supplied in line 37 as a fluidizing gas to the fluidized bed reactor 22 of the circulating fluidized bed system (col. 7, lines 64-67 and col. 8, lines 1-2). As can be seen from the figures, there are several lines "35," and while it cannot be clearly seen from line "37," a plurality of nozzles or inlet openings would be inherently present in these fluidized bed reactors for practical purposes of even distribution.

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Regarding claim 12, Hirsch clearly teaches two venturi preheaters with subsequent downstream cyclones and that the gas from cyclone 4 is conducted in line 14 to a filter 15, from which the purified gas is discharged through line 16 and the separated dust is discharged through line 17 (col. 7, lines 32-44).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLIN W. SLIFKA whose telephone number is (571)270-5830. The examiner can normally be reached on Monday-Thursday, 10:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLIN W SLIFKA/
Examiner, Art Unit 4162

/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162